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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,842	11/12/2003	Paul S. Andry	YOR920010100US2 (8728-493)	6927
22150	7590	04/12/2006	EXAMINER	
F. CHAU & ASSOCIATES, LLC			HON, SOW FUN	
130 WOODBURY ROAD			ART UNIT	
WOODBURY, NY 11797			PAPER NUMBER	

1772

DATE MAILED: 04/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/706,842

Applicant(s)

ANDRY ET AL.

Examiner

Sow-Fun Hon

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-19 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-19 and 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

PROSECUTION REOPENED

1. Finality is withdrawn due to Applicant's arguments dated 03/29/06. However, due to Applicant's amendments to claims 15-18, 21-24, this Office action is made final, as necessitated by amendment.

DETAILED ACTION

Withdrawn Rejections

2. The 35 U.S.C. 112, 2nd paragraph rejection of claims 16-18 is withdrawn due to Applicant's amendment dated 01/26/06.

3. The 35 U.S.C. 102(b) and 103(a) rejections of claims 15-19, 21-25 are withdrawn due to Applicant's amendment dated 01/26/06.

Claim Objections

4. Claim 25 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim 23. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. It appears to have been intended to depend on claim 24, and should be rewritten as such.

Response to Amendment

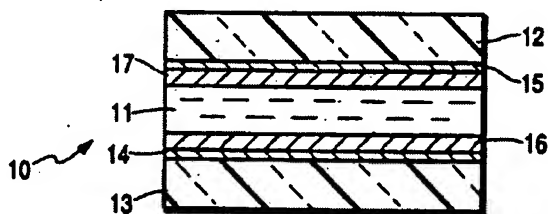
New Rejections

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 102

5. Claims 15, 17, 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaganowicz (US 5,011,268).

Regarding claims 15, 17, Kaganowicz has a liquid crystal display device, comprising: an alignment layer (abstract) and liquid crystal material 11 in contact with alignment layer 16 (column 3, lines 10-20).



Kaganowicz teaches that the alignment layer comprises constituent materials, the constituent materials having a stoichiometric ratio, such as silicon oxynitride (column 3, lines 60-70), as disclosed by Applicant's specification (original claim 17), for the purpose of providing an effective alignment layer (column 3, lines 45-55) with the required pretilt angle (tilt, column 3, lines 25-30).

Regarding claim 19, Kaganowicz teaches that the material includes SiO_x (silicon oxide, column 4, lines 47-48), which provides a homeotropic alignment layer, as

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evidenced by Applicant's specification (page 10, lines 5-10). Kaganowicz teaches that the material provides a tilt angle (column 3, lines 15-20), which means that the homeotropic alignment layer is tilted.

6. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Kaganowicz (US 5,011,268), as evidenced by McBride (US 5,348,913).

Kaganowicz teaches that the final constituent materials of one embodiment of the alignment layer are silicon and nitrogen (silicon nitride, Example 1, column 4, lines 5-10) providing a preexisting pretilt angle (tilt, column 3, lines 19-20), and that the final constituent material of a second embodiment of the alignment layer are silicon, nitrogen and oxygen (silicon oxynitride, Example 2, column 4, lines 5-10), an amount of at least one of the constituent materials for providing a stoichiometric ratio of the constituent materials of the alignment layer, wherein the amount provides a given pretilt angle of the alignment layer different than the preexisting pretilt angle of the alignment layer comprising silicon and nitrogen, but not oxygen, as evidenced by McBride.

McBride teaches that the contact angle provided by a material which comprises silicon and oxygen, but not nitrogen (SiO_2 , 44 degrees, column 5, lines 15-20), is different from one which comprises silicon and nitrogen, but not oxygen (SiN , 31 degrees, column 5, lines 15-20), both of which are different from one which comprises silicon, oxygen and nitrogen (SiON , 34 degrees, column 5, lines 15-20).

Claim Rejections - 35 USC § 103

7. Claims 16,18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaganowicz as applied to claims 15,17,19 above, and further in view of Onuma (US 5,353,141).

Kaganowicz teaches the alignment layer comprising constituent materials having a stoichiometric ratio to provide a given pretilt angle, such as SiO_x as discussed above, but fails to teach that the alignment layer includes SiC_x wherein x provides the stoichiometric relationship.

However, Onuma teaches that SiC_x can be used instead of SiO_x (silicon carbide, silicon dioxide, column 7, lines 1-3) as the inorganic alignment layer (column 6, lines 67-68) for the purpose of utilizing its physical properties. SiC_x is a material having Pi-electrons as defined in Applicant's specification (page 11, lines 5-15) and x provides a stoichiometric relationship, which allows the SiC_x to exist in stable form.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used SiC_x in place of the SiO_x in the inorganic alignment layer of Kaganowicz, wherein x provides a stable stoichiometric ratio, in order to provide an inorganic alignment layer with the desired pretilt angle, utilizing the physical properties of SiC_x , as taught by Onuma.

8. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kaganowicz as applied to claims 15,17,19 above, and further in view of Chaudhari (US 6,195,146).

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Kaganowicz teaches the liquid crystal display device comprising an alignment layer comprising constituent materials having a stoichiometric ratio to provide a given pretilt angle, as discussed above, but fails to teach that the liquid crystal display device further comprises ions directed at the alignment layer to provide uniformity of the pretilt angle.

However, Chaudhari teaches a liquid crystal display device comprising ion-beam irradiation (exposure, column 1, lines 15-20) directed at the alignment layer (column 2, lines 15-25). Chaudhari teaches that the irradiation method is for the purpose of providing stability and uniformity of the pretilt angle (consistency, column 1, lines 55-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have further comprises ions directed at the alignment layer of Kaganowicz, in order to ensure stability and uniformity of the pretilt angle, as taught by Chaudhari.

9. Claims 23, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaganowicz, as evidenced by McBride, as applied to claim 21 above, and further in view of Chaudhari (US 6,195,146).

Kaganowicz, as evidenced by McBride, teaches the liquid crystal display device comprising an alignment layer wherein a amount of at least one of the constituent materials for providing a stoichiometric ratio of the constituent materials of the alignment layer, wherein the amount provides a given pretilt angle different than the preexisting pretilt angle of the alignment layer, as discussed above, but fails to teach that the liquid

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crystal display device further comprises ions directed at the alignment layer to provide uniformity of the pretilt angle.

However, Chaudhari teaches a liquid crystal display device comprising ion-beam irradiation (exposure, column 1, lines 15-20) directed at the alignment layer (column 2, lines 15-25). Chaudhari teaches that the irradiation method is for the purpose of providing stability and uniformity of the pretilt angle (consistency, column 1, lines 55-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have further comprises ions directed at the alignment layer of Kaganowicz, as evidenced by McBride, in order to ensure stability and uniformity of the pretilt angle, as taught by Chaudhari.

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kato (US 5,745,205).

Kato teaches a liquid crystal display device (column 6, lines 63-66), comprising: an alignment layer (orientation film, column 6, lines 66-67), a liquid crystal material (305, column 6, line 13, Fig. 3) in contact with the alignment layer (orientation film 301a, column 6, lines 13-14, Fig. 3), wherein the alignment layer comprises Si, O, SiO_x (silicon oxide which includes silicon monoxide and silicon dioxide mixtures, column 4, lines 32-40) which are listed in Applicant's group of materials, for the purpose of providing a slightly tilting homeotropic alignment (orientation, column 4, lines 40-45). Kato fails to specify that the alignment layer comprises a first material provides a homeotropic alignment and a second material providing a more homogeneous alignment than the first material to provide a given pretilt angle to the alignment layer.

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However, Kato teaches that the alignment layer comprises Si, O, SiO_x (silicon oxide which includes silicon monoxide and silicon dioxide mixtures, column 4, lines 32-40), which are listed in Applicant's group of materials, for the purpose of providing a slightly tilting homeotropic alignment (orientation, column 4, lines 40-45).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a mixture of a first material which provides a homeotropic alignment, and a second material in an amount to provide a given pretilt angle to the alignment layer, the second material providing a more homogenous alignment than the first material, such as Si and O or SiO_x, in order to provide a slightly tilting homeotropic alignment, as taught by Kato.

Response to Arguments

11. Applicant's arguments with respect to claims 15-19, 21-25 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

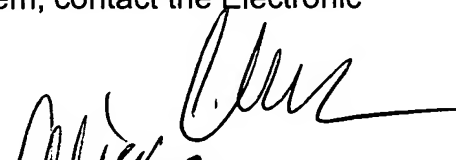
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon.

Sow-Fun Hon

04/07/06


ALICIA CHEVALIER
PRIMARY EXAMINER